Amendments to the Claims

1. (Original) A communication system, comprising:

a span of Phosphate-doped optical fiber configured to transport optical signals; and

a continuous wavelength light system coupled to the span of Phosphate-doped optical fiber and configured to pump continuous wavelength light onto the span of Phosphate-doped optical fiber to generate a total gain bandwidth of at least 120 nm.

2. (Original) The communication system of claim 1 wherein the span of Phosphate-doped optical fiber comprises a span of Phosphate-Germanium co-doped optical fiber.

3. (Original) The communication system of claim 1 wherein the continuous wavelength light system is configured to pump continuous wavelength light onto the span of Phosphate-doped optical fiber to generate a first gain band having a bandwidth of at least 60 nm and a second gain band having a bandwidth of at least 60 nm.

4. (Original) The communication system of claim 3 wherein the first gain band and the second gain band are separated by a wavelength gap, and wherein the communication system further comprises:

an optical amplifier configured to amplify the wavelengths in the wavelength gap.

5. (Original) The communication system of claim 1 wherein the continuous wavelength light system is configured to pump the continuous wavelength light onto the span of Phosphate-doped optical fiber to generate a total gain bandwidth of about 200 nm.

6. (Original) The communication system of claim 1 wherein the continuous wavelength light system is configured to forward pump the continuous wavelength light onto the span of Phosphate-doped optical fiber.

7. (Original) The communication system of claim 1 wherein the continuous wavelength light system is configured to backward pump the continuous wavelength light onto the span of

Phosphate-doped optical fiber.

8. (Original) The communication system of claim 1 wherein the continuous wavelength light system is configured to forward pump and backward pump the continuous wavelength light onto the span of Phosphate-doped optical fiber.

9. (Original) The communication system of claim 1 wherein the continuous wavelength light system comprises a continuous wavelength Raman fiber laser.

10. (Original) The communication system of claim 1 wherein the continuous wavelength light system is configured to pump the continuous wavelength light onto the span of Phosphate-doped optical fiber to generate a total gain bandwidth of at least 120 nm that includes at least the C-band.

11. (Original) The communication system of claim 1 wherein the continuous wavelength light system is configured to pump the continuous wavelength light onto the span of Phosphate-doped optical fiber to generate a total gain bandwidth of at least 120 nm that includes at least the C-band and the L-band.

12. (Original) The communication system of claim 1 wherein the continuous wavelength light system is configured to pump the continuous wavelength light onto the span of Phosphate-doped optical fiber to generate a total gain bandwidth of at least 120 nm that includes at least the C-band, the L-band, and the S-band.

13. (Original) The communication system of claim 1 wherein the continuous wavelength light system is configured to pump the continuous wavelength light onto the span of Phosphate-doped optical fiber to generate a total gain bandwidth of at least 120 nm that does not include at least one of the C-band, the L-band, and the S-band.

14. (Original) A method of operating a communication system comprising a continuous wavelength light system and a span of Phosphate-doped optical fiber, the method comprising the

steps of:

transporting optical signals on the span of Phosphate-doped optical fiber; and

pumping continuous wavelength light on the span of Phosphate-doped optical fiber with a continuous wavelength light system to generate a total gain bandwidth of at least 120 nm.

15. (Original) The method of claim 14 wherein the span of Phosphate-doped optical fiber comprises a span of Phosphate-Germanium co-doped optical fiber.

16. (Original) The method of claim 14 wherein the step of pumping continuous wavelength light on the span of Phosphate-doped optical fiber with a continuous wavelength light system comprises:

pumping the continuous wavelength light onto the span of Phosphate-doped optical fiber to generate a first gain band having a bandwidth of at least 60 nm and a second gain band having a bandwidth of at least 60 nm.

17. (Original) The method of claim 16 wherein the first gain band and the second gain band are separated by a wavelength gap, and the method further comprises:

amplifying the wavelengths in the wavelength gap with an optical amplifier.

18. (Original) The method of claim 14 wherein the step of pumping continuous wavelength light on the span of Phosphate-doped optical fiber with a continuous wavelength light system to generate a total gain bandwidth of at least 120 nm comprises:

pumping the continuous wavelength light on the span of Phosphate-doped optical fiber with the continuous wavelength light system to generate a total gain bandwidth of about 200 nm.

19. (Original) The method of claim 14 wherein the step of pumping continuous wavelength light on the span of Phosphate-doped optical fiber comprises:

forward pumping the continuous wavelength light on the span of Phosphate-doped optical fiber.

20. (Original) The method of claim 14 wherein the step of pumping continuous wavelength light on the span of Phosphate-doped optical fiber comprises:

backward pumping the continuous wavelength light on the span of Phosphate-doped optical fiber.

21. (Original) The method of claim 14 wherein the step of pumping continuous wavelength light on the span of Phosphate-doped optical fiber comprises:

backward and forward pumping the continuous wavelength light on the span of Phosphate-doped optical fiber.

22. (Original) The method of claim 14 wherein the continuous wavelength light system comprises a continuous wavelength Raman fiber laser.

23. (Original) The method of claim 14 wherein the step of pumping continuous wavelength light on the span of Phosphate-doped optical fiber with a continuous wavelength light system comprises:

pumping the continuous wavelength light on the span of Phosphate-doped optical fiber with the continuous wavelength light system to generate the total gain bandwidth in at least the C-band.

24. (Original) The method of claim 14 wherein the step of pumping continuous wavelength light on the span of Phosphate-doped optical fiber with a continuous wavelength light system comprises:

pumping the continuous wavelength light on the span of Phosphate-doped optical fiber with the continuous wavelength light system to generate the total gain bandwidth in at least the C-band and the L-band.

25. (Original) The method of claim 14 wherein the step of pumping continuous wavelength light on the span of Phosphate-doped optical fiber with a continuous wavelength light system comprises:

pumping the continuous wavelength light on the span of Phosphate-doped optical fiber

with the continuous wavelength light system to generate the total gain bandwidth in at least the C-band, the L-band, and the S-band.

26. (Original) The method of claim 14 wherein the step of pumping continuous wavelength light on the span of Phosphate-doped optical fiber with a continuous wavelength light system comprises:

pumping the continuous wavelength light on the span of Phosphate-doped optical fiber with the continuous wavelength light system to generate the total gain bandwidth outside of at least one of the C-band, the L-band, and the S-band.